

**Bonneville Power Administration
Fish and Wildlife Program FY99 Proposal Form**

Section 1. General administrative information

Independent Scientific Advisory Board Support

Bonneville project number, if an ongoing project 8907201

Business name of agency, institution or organization requesting funding
Department of Energy/Oak Ridge National Laboratory

Business acronym (if appropriate) DOE/ORNL

Proposal contact person or principal investigator:

Name	<u>Charles C. Coutant</u>
Mailing Address	<u>ORNL/ESD/PO Box 2008/ Bldg. 1505; Mail Stop 6036</u>
City, ST Zip	<u>Oak Ridge, TN 37831-6036</u>
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Email address	<u>ccc@ornl.gov</u>

Subcontractors. List one subcontractor per row; to add more rows, press Alt-Insert from within this table

Organization	Mailing Address	City, ST Zip	Contact Name
No subcontractors			

NPPC Program Measure Number(s) which this project addresses.

3.2B.1

NMFS Biological Opinion Number(s) which this project addresses.

No Biological Opinion number

Other planning document references.

If the project type is "Watershed" (see Section 2), reference any demonstrable support from affected agencies, tribes, local watershed groups, and public and/or private

landowners, and cite available documentation.

No other document references

Subbasin.

No subbasin

Short description.

Provide support through contract with DOE for one member (of 11) of the Independent Scientific Advisory Board (ISAB), for scientific advice to the Northwest Power Planning Council's Fish and Wildlife Program and the National Marine Fisheries Service's Endangered Species Act programs.

Section 2. Key words

Mark	Programmatic Categories	Mark	Activities	Mark	Project Types
x	Anadromous fish		Construction		Watershed
	Resident fish		O & M		Biodiversity/genetics
	Wildlife		Production		Population dynamics
	Oceans/estuaries		Research	x	Ecosystems
	Climate		Monitoring/eval.		Flow/survival
	Other		Resource mgmt		Fish disease
		x	Planning/admin.		Supplementation
			Enforcement		Wildlife habitat en-
			Acquisitions		hancement/restoration

Other keywords.

science, advice, advisory, review

Section 3. Relationships to other Bonneville projects

Project #	Project title/description	Nature of relationship
9600500	Operation of the Independent Scientific Advisory Board	One member funded separately

Section 4. Objectives, tasks and schedules

Objectives and tasks

Obj	Task
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1,2,3	Objective	a,b,c	Task
1	Provide scientific advice to NPPC and NMFS as requested		Tasks defined separately

Objective schedules and costs

Objective #	Start Date mm/yyyy	End Date mm/yyyy	Cost %
1	12/1998	12/1999	100

Schedule constraints.

Schedules established monthly

Completion date.

Continuing

Section 5. Budget

FY99 budget by line item

Item	Note	FY99
Personnel		57,305
Fringe benefits		
Supplies, materials, non-expendable property		
Operations & maintenance		
Capital acquisitions or improvements (e.g. land, buildings, major equip.)		
PIT tags	# of tags:	
Travel		11,550
Indirect costs		30,985
Subcontracts		
Other		
TOTAL		99,840

Outyear costs

Outyear costs	FY2000	FY01	FY02	FY03
Total budget	100,000	100,000	100,000	100,000
O&M as % of total				

Section 6. Abstract

This project provides support through the Department of Energy for one member (of 11) of the Independent Scientific Advisory Board (ISAB), successor to the Independent Scientific Group called for in Measure 3.2B.1 of the Northwest Power Planning Council's Fish and Wildlife Program (FWP) to provide scientific advice to the Council. The ISAB has also been constituted to advise the National Marine Fisheries Service on its Endangered Species Act responsibilities for the Columbia River Basin. The ISAB responds to specific questions posed by the Council or NMFS through formal requests. The ISAB meets regularly (usually monthly) to discuss issues and develop consensus reports to the Council and NMFS. The individual supported by this project serves on the Executive and Mainstem committees, and prepares drafts of reports within his area of expertise (salmon, mainstem habitat, temperature, dissolved gas, flow/survival, passage) for full ISAB discussion and consensus. The expected outcome is provision of timely and scientifically accurate advice to the Council and NMFS. Results are monitored by topical reports that respond to specific questions posed by the Council and NMFS.

Section 7. Project description**a. Technical and/or scientific background.**

Sound scientific principles and data must guide implementation of the goals and objectives of the Northwest Power Planning Council's 1994 Fish and Wildlife Program (FWP) and the National Marine Fisheries Service's Endangered Species Act Biological Opinion and draft Recovery Plan. This conclusion has been reached by the Council in the FWP and the NMFS as a result of review of its salmon restoration efforts by the National Research Council (NRC). The Power Planning Council's 1994 FWP (Measure 3.2B.1) called for an Independent Scientific Group (ISG) to be formed to advise the Council, and it assigned the Group specific responsibilities. The NRC in 1995 recommended formation of an advisory board to provide scientific advice to the NMFS in its Endangered Species Act responsibilities in the Columbia River basin. In 1996, the Power Planning Council's existing ISG was reformulated with additional members and established to advise both agencies.

Both the ISG and the NRC called for an integrated conceptual foundation for salmon restoration and related fish and wildlife management in the federal hydropower system, based on sound ecological and life-history principles and knowledge. The ISG

described the conceptual foundation in its report, *Return to the River*; the NRC expressed its views in its book, *Upstream*. They are complimentary. The ISAB now provides its advice to the agencies in the contexts of those documents.

Participation by one member of the ISAB, Dr. Charles Coutant, is funded separately from other members. The ISAB as a whole is funded through BPA Project No. 9600500, Operation of the Independent Scientific Advisory Board. Dr. Coutant is employed by a contractor of the Department of Energy, which requires a separate funding mechanism. This project is for the support of Dr. Coutant.

b. Proposal objectives.

The single objective of the project is to fund Dr. Coutant to provide scientific advice to NPPC and NMFS, through the Independent Scientific Advisory Board, as requested by the Council and NMFS. The advice is given in the form of consensus reports by the ISAB to the Council and NMFS that address specific requests made of the ISAB. The project cost covers time, travel, incidental material and services expenses, and overhead.

c. Rationale and significance to Regional Programs.

(see 7a)

d. Project history

Dr. Coutant's participation in advisory bodies to the Council's Fish and Wildlife Program began in 1989 with appointment to the BPA Scientific Review Group (SRG). The SRG was a component of the Implementation Planning Process for BPA's implementation of the Council's 1987 FWP and the 1980 Northwest Power Act. This project was established at that time with the title, "Scientific Review Group Support."

In 1995, the SRG was reestablished as the Independent Scientific Group (ISG) to specifically address Measure 3.2B.1 of the 1994 FWP. Dr. Coutant was appointed to the ISG and the project (same number) was retitled "Independent Scientific Group Support." This title remained in FY 1997 and FY 1998.

In 1996, the ISG was reformulated as the Independent Scientific Advisory Board (see 7a) with Dr. Coutant as a member. It is proposed to change the title to "Independent Scientific Advisory Board Support" while retaining the same project number.

Numerous reports have been prepared under this project, and are listed in annual reports by the SRG, ISG, and ISAB to the respective agency. For fiscal year 1997, the reports were:

Williams, R. N., L. D. Calvin, C. C. Coutant, M. W. Erho, jr., J. A. Lichatowich, W. J. Liss, W. E. McConnaha, P. R. Mundy, J. A. Stanford, R. R. Whitney, D. L. Bottom, and

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C. A. Frissell. 1996. Return to the River: Restoration of Salmonid Fishes in the Columbia River Ecosystem. Public Comment Draft. NPPC 96-6. Northwest Power Planning Council, Portland, Oregon

C. C. Coutant, P. A. Bisson, D. Goodman, J. A. Lichatowich, W. J. Liss, L. McDonald, P. Mundy, B. Riddell, J. A. Stanford, and R. N. Williams. 1997. Review of the National Marine Fisheries Service's 1996 Annual Report to the Oregon Department of Environmental Quality@ Related to Waiver of Dissolved Gas Standard. ISAB 97-1. Northwest Power Planning Council and National Marine Fisheries Service, Portland, Oregon
ESD # na

Williams, R. N., P. A. Bisson, C. C. Coutant, D. Goodman, J. A. Lichatowich, W. J. Liss, L. McDonald, P. Mundy, B. Riddell, J. A. Stanford, and R. R. Whitney. 1997. Report of the Independent Scientific Advisory Board Regarding a Research Proposal for Inclusion in the 1997 Smolt Monitoring Program. ISAB 97-2. Northwest Power Planning Council and National Marine Fisheries Service, Portland, Oregon

Williams, R. N., P. A. Bisson, C. C. Coutant, D. Goodman, J. A. Lichatowich, W. J. Liss, L. McDonald, P. Mundy, B. Riddell, J. A. Stanford, and R. R. Whitney. 1997. Ecological Impacts of the Flow Provisions of the Biological Opinion for Endangered Snake River Salmon on Resident Fishes in the Hungry Horse and Libby Systems in Montana, Idaho, and British Columbia. . ISAB 97-3. Northwest Power Planning Council and National Marine Fisheries Service, Portland, Oregon

Williams, R. N., P. A. Bisson, C. C. Coutant, D. Goodman, J. A. Lichatowich, W. J. Liss, L. McDonald, P. Mundy, B. Riddell, J. A. Stanford, and R. R. Whitney. 1997. Report of the Independent Scientific Advisory Board Regarding A Research Proposal for Inclusion in the Columbia River Basin Fish and Wildlife Program: Lake Pend Oreille Fishery Recovery Project. ISAB 97-4. Northwest Power Planning Council and National Marine Fisheries Service, Portland, Oregon

Williams, R. N., P. A. Bisson, C. C. Coutant, D. Goodman, J. A. Lichatowich, W. J. Liss, L. McDonald, P. Mundy, B. Riddell, J. A. Stanford, R. R. Whitney, and S. S. Hanna. 1997. Review of a Draft Programmatic Environmental Impact Statement: Impacts of Artificial Salmon and Steelhead Production Strategies in the Columbia River Basin. ISAB 97-5. Northwest Power Planning Council and National Marine Fisheries Service, Portland, Oregon

e. Methods.

Methods of operation for the ISAB are specifically outlined in a memorandum of agreement and operating guidelines between the National Marine Fisheries Service and the Northwest Power Planning Council. Responsibilities of members are also specified.

Briefly, the ISAB responds to specific requests for advice from either the Council

or NMFS. Following discussion between the Board and the designated representatives of the Council and NMFS, the mutually understood and agreed-upon request is formalized in a letter. The ISAB Executive Committee discusses the best way to approach the request, and generally assigns a subcommittee to work on it. The request is discussed by the full ISAB before work begins. A subcommittee ensures that all relevant materials for addressing the request are available to members, and may request additional material or oral briefings from relevant parties (who are asked to volunteer any additional information they view as important to the request). The subcommittee (with one lead author) then drafts a report from the ISAB in response to the request. Each draft report undergoes several reviews and revisions by subcommittee members and then the whole ISAB. Monthly meetings of the ISAB are devoted largely to discussing current versions of each report in progress. Advisors from the Council and NMFS attend these meetings and ensure that the proposed report is responsive to the intent of the request. When consensus is reached on a report, the final is transmitted to the ISAB chair, who in turn assigns a document number and transmits it to the Council and NMFS. Further distribution and any discussion of the report are handled by the Council or NMFS.

f. Facilities and equipment.

Meeting space is provided by the Council at its Portland office and by NMFS at the Seattle Northwest Science Center (monthly meetings generally alternate). Staff support is provided at meetings and at other times by both agencies. Members provide their own office space, computers, etc. The ISAB is coordinated electronically with e-mail and standard word processing and e-mail programs, provided by each member. Dr. Coutant is provided contemporary office, library, and administrative facilities and support by the Oak Ridge National Laboratory, a 4000+ staff, multipurpose research and development laboratory within the U.S. Department of Energy national laboratory system

g. References.

(none)

Section 8. Relationships to other projects

This project is an integral component of Project No. 9600500 (Operation of the Independent Scientific Advisory Board). This project funds one member of 11 through agreement with the Department of Energy. Because of its review function, the project relates to all other projects in the Fish and Wildlife Program.

Section 9. Key personnel

This project is for the support of Dr. Charles C. Coutant as a member of the ISAB. A brief resume follows. Publications of the ISAB for FY 1997 are listed in Section 7d.

Section 10. Information/technology transfer

All ISAB reports are directed to the Northwest Power Planning Council and the National Marine Fisheries Service. Most are provided to the public in full on the Council's Internet web site (www.nwppc.org).

BRIEF RESUME

Charles C. Coutant, Ph. D.

Senior Research Ecologist, Environmental Sciences Division
Oak Ridge National Laboratory, Oak Ridge, Tennessee 37831-6036
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Education: BA 1960 (Lehigh); MS 1962 (Lehigh); PhD 1965 (Lehigh).

Previous Positions: (1) Battelle-Pacific Northwest Laboratories, Richland, Washington (1965-70): Research Scientist, Columbia River Thermal Effects Studies; (2) Oak Ridge National Laboratory (1970-present): Manager Thermal Effects Program (1970-79), Leader Multimedia Modeling Project (1979-82); Manager DOE Global Carbon Cycle Program (1985-86); Manager ORNL Exploratory Studies Program (1989-1991); Senior Research Staff (1982-85, 1986-88, 1992-present).

Professional Affiliations: American Association for the Advancement of Science (Fellow); American Institute of Fishery Research Biologists (Fellow); American Fisheries Society (President of Tennessee Chapter, Southern Division, and Water Quality Section; Co-Editor Transactions; Society President 1996-97); American Society of Limnology and Oceanography; American Society for Testing and Materials (Chair Environmental Fate Models Task Group); Ecological Society of America (Vice Chair Applied Ecology Section); Sigma Xi (Southeast Regional Lecturer, President Oak Ridge Chapter); Water Pollution Control Federation (Literature Review Committee-Thermal Effects).

Honors: Darbaker Prize in Microbiology, Pennsylvania Academy of Science; Director's Award, Battelle-Northwest; Excellence in Fisheries, TN Chapter AFS; Outstanding Publication, Martin Marietta Energy Systems (operator of ORNL); Distinguished Publication, American Society for Information Science; Distinguished Service Award, American fisheries Society.

Publications: refereed articles in journals-44; non-refereed articles in journals-19; book chapters-29, symposium articles-31; laboratory or agency reports-64; book reviews, news

articles, editorials-19; contributions to Environmental Impact Statements-9; total 216 (as of end of FY1996).

Synopsis of Significant Technical Contributions: Field study of thermal discharge effects on invertebrates of Delaware River; Laboratory and field studies of thermal effects of Hanford reactors on Columbia River salmonids and other aquatic life; annual reviews of thermal effects publications 1968-1980; evaluation of aquatic thermal effects information to provide national water temperature criteria recommendations by the National Academy of Sciences; participation in development of EPA guidelines for Clean Water Act §316(a) thermal studies of power stations; development of biological data and criteria for environmental impact assessments of steam electric power plants; participant in the establishment of the Electric Power Research Institute and member of its national Advisory Council; development of electronic temperature telemetry of fishes as a research tool for thermal behavior studies; lead role in developing guidance for thermal power plant impact assessment for UNESCO and International Atomic Energy Agency; advisor on project evaluation to Bonneville Power Administration Fish and Wildlife Program and member of Scientific Review Group; member of Northwest Power Planning Council's Independent Scientific Group (now Independent Scientific Advisory Board) for Pacific salmon restoration; elucidation of the thermal ecology of striped bass through laboratory and field research and its application to management of the species in fresh water and estuaries; evaluation of impacts of hydropower on aquatic systems; review and evaluation of §316(a) study plans, studies, and documents for power companies.

Synopsis of Management Experience: Leader of several research teams up to about 15 people; manager of Department of Energy intra- and extramural research program (\$4 million/yr); manager of ORNL internal funding program (\$6-10 million/yr).

Background Related to Salmonids

Dr. Coutant has conducted field and laboratory research on Columbia River salmonids, particularly in relation to thermal discharges at Hanford in the 1960s. Those studies included field telemetry of upstream migrations of adult summer chinook and summer steelhead, laboratory studies of temperature tolerances of juvenile and adult salmon and steelhead (including thermal effects on predation), thermal effects of juveniles passing through thermal plumes, and studies of effects of gas supersaturation on juveniles and adults. He participated in team studies of juvenile fall chinook salmon ecology in the unimpounded Hanford reach. He has participated in assessments of water developments on fall chinook salmon and steelhead in the American, Mokelumne, and Tuolumne rivers of California. He is currently a member of the Independent Scientific Advisory Board advising the Northwest Power Planning Council, the National Marine Fisheries Service and Bonneville Power Administration regarding the Columbia River Basin Fish and Wildlife Program.

Relevant Publications (other than ISAB)

Cada, G. F., C. C. Coutant, and R. R. Whitney. 1997. Development of biological criteria for the design of advanced hydropower turbines. DOE/ID-10578. US Department of Energy, Idaho Operations Office, Idaho Falls, Idaho.

Whitney, R. R., L. D. Calvin, M. W. Erho, jr., and C. C. Coutant. 1997. Downstream passage for salmon at hydroelectric projects in the Columbia River Basin: development, installation, and evaluation. Northwest Power Planning Council, Portland, Oregon.

Jager, H. I., H. E. Cardwell, M. J. Sale, M. S. Bevelhimer, C. C. Coutant, and W. Van Winkle. 1997. Modeling the linkages between flow management and salmon recruitment in rivers. *Ecological Modeling* 103:171-191.

Coutant, C. C., L. D. Calvin, M. W. Erho, jr., J. A. Lichatowich, W. J. Liss, W. E. McConnaha, P. R. Muncy, J. A. Stanford, R. R. Whitney, R. N. Williams, D. L. Bottom, and C. A. Frissell. 1997. The normative river: an ecological vision for the recovery of the Columbia River salmon. Pages 50-59, in D. J. Mahoney, editor. *Waterpower '97*. Proceedings of the 1997 International Conference on Hydropower. American Society of Civil Engineers, New York.

Stanford, J. A., J. V. Ward, W. J. Liss, C. A. Frissell, R. N. Williams, J. A. Lichatowich, and C. C. Coutant. 1996. A general protocol for restoration of regulated rivers. *Regulated Rivers: Research and Management* 12:391-413.